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# MEDICAL NEWS LETTER

Rear Admiral Bartholomew W. Hogan MC USN - Surgeon General  
 Captain Leslie B. Marshall MC USN (RET) - Editor

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HISTORICAL FUND  
of the  
NAVY MEDICAL DEPARTMENT

A committee has been formed with representation from the Medical Corps, Dental Corps, Medical Service Corps, Nurse Corps, and Hospital Corps for the purpose of creating a fund to be used for the collection and maintenance of items of historical interest to the Medical Department. Such items will include, but will not be limited to, portraits, memorials, etc., designed to perpetuate the memory of distinguished members of the Navy Medical Department. These memorials will be displayed in the Bureau of Medicine and Surgery and at the National Naval Medical Center. Medical Department officers, active and inactive, are invited to make small contributions to the fund. It is emphasized that all donations must be on a strictly voluntary basis. Funds received will be deposited in a Washington, D. C. bank to the credit of the Navy Medical Department Historical Fund, and will be expended only as approved by the Committee or its successor and for the objectives stated.

It is anticipated that an historical committee will be organized at each of our medical activities. If you desire to contribute please do so through your local historical committee or send your check direct, payable to Navy Medical Department Historical Fund, and mail to:

Treasurer, N. M. D. Historical Fund  
Bureau of Medicine and Surgery (Code 14)  
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### Policy

The U. S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be, nor are they, susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

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### Radiation Hazards

As a by-product of concern over the effects of fallout from thermonuclear weapon tests or the worse eventuality of thermonuclear warfare, public attention has been directed to the hazards of the medical use of ionizing radiations. These hazards are not new, but there are some new features about them which deserve consideration. There has been some distortion and misplaced emphasis as to the extent of hazards in medical radiation, but there has also been reasonable advice on some radiation precautions. Some good recommendations have been made as well as some ill-advised and impractical ones.

The basic information on radiation hazards is not of uniform reliability. Some information has the authority of well known and proven fact. Some has been derived from less precise experimental and statistical evidence that is not susceptible to further proof at this time. Some should properly be considered as conjecture, interesting or even brilliant, but debatable. Offering such unequal certainties as the bases for positive action, they must, nevertheless, be used as the best that is available at this time.

The well known and generally accepted facts deserve frequent repetition. They have been the theme of national and international committee recommendations, of numerous contributions to scientific meetings and journals, and of teaching that: (1) Exposure of human beings to ionizing radiation always involves potential hazard regardless of beneficial purpose. The hazards are both somatic and genetic. (2) Radiation dosage should be kept as low as possible while accomplishing the desired medical diagnostic or therapeutic aim. (3) Education and experience are needed for each decision of medical usefulness versus hazard and for close control of radiation dosage. (4) Development and use of improved techniques, instruments, and apparatus has reduced and continues to reduce radiation exposure

(5) Medical indications for radiologic procedures are subject to changing factors and should be reviewed constantly in the light of advances from all branches of science.

New findings, new evidence, and new interpretations deserve serious attention. In this symposium, the most important ones have been discussed in some detail with critical regard to the reliability of each consideration. Important features from these can be summarized as follows:

1. The quantitative level of radiation which may significantly affect the genetic future of populations is now thought to be lower than formerly, from the best genetic experimental evidence.

2. From similar experimental evidence, there appears to be no radiation exposure threshold for the genetic hazard to populations.

3. Life shortening effects on the individual human being should be included in the considerations of radiation hazard. On best experimental analysis they do not seem excessive, but they cannot be ignored.

4. There are evidences that low levels of radiation exposure may have greater somatic and genetic consequences during infancy and childhood.

5. The medical use of radiation is increasing and is now approaching the point where its hazards have become a population problem as well as an individual one.

6. The amount of radiation exposure of the population is not known, its precise estimation is extraordinarily difficult, and—to be of scientific value—its study must be comprehensive, considering differential exposures of the portions of the body as well as whole body exposure.

7. The present exposure to radiation for medical and dental purposes can be appreciably reduced by techniques and methods that are already available. These are economically feasible and largely require only interest, education, and the use of well established information and instruments.

What practical advice and guides for action, then, can be drawn from this best of current and past knowledge? The physician using radiation should look to:

1. The apparatus used for radiation exposure. The cones should limit the beam to the desired area or film and they should have no marginal leakage. Adequate added filtration should be employed. The radiation output should be determined and known for the various conditions of use.

2. Who is being exposed? Think of the individual person whenever undertaking a procedure, especially those on children, pregnant or potentially pregnant women, and in fact, anyone below the age of 40.

3. Where is the exposure given? Recognize the additional hazard when the gonads are included in the primary beam and when large volumes of the body are exposed.

4. How much exposure is given? Devote special attention to extensive examinations involving large amounts of radiation and to repeated procedures. Consider both local and integral radiation dosage.

5. Why is radiation exposure used? There should be good and adequate reason—a purpose based on medical judgment—in the decision to do any procedure at a given time.

The users of radiation in the healing arts bear impressive responsibilities. These include vigilance in preventing unwanted exposure of the public, patients, and radiation workers, while yet allaying undue fear on the part of each. Education of all is a continuing obligation so that total knowledge may be extended to its fullest use. (Chamberlain, R.H., A Summary - Today's Problems in Radiation Hazards and What Is Being Done to Control Them: Am. J. Roentgenol., 78: 1000-1002, December 1957)

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#### Biliary Enteric Fistula

Biliary enteric fistulas are, with rare exception, complications of long standing and far advanced biliary tract disease. The majority of patients with this condition are in the older age group and have associated conditions frequently present in elderly individuals. The symptoms, disability, and injury to the biliary tract and to the liver that such fistulas give rise to are best treated by surgical correction. The morbidity of complications and the mortality rate following operations in such individuals are much greater than those requiring only cholecystectomy for cholecystitis with cholelithiasis. In the stage or phase of biliary tract disease that gives rise to biliary enteric fistula formation, irreversible changes are usually present in the liver and biliary tract. These changes and the impairment of the physiologic function of other systems particularly in this age group render many of these patients poor operative risks. This is in contrast to the ease and safety with which calcareous biliary tract disease may be treated surgically within a reasonable period after the diagnosis has been established. Successful surgical treatment of biliary enteric fistula requires meticulous evaluation and precision management.

The authors' experience with 40 cases of biliary enteric fistulas, believed to be due to intrinsic biliary tract disease, is reported. Those fistulas secondary to peptic ulcer are omitted. The 40 patients have been divided into three groups according to the attending circumstances present at the time they were encountered. This is thought to be important because

the course of events prior to the time that the fistula is demonstrated at operation has a bearing on the procedure followed. Accurate evaluation and selective surgical therapy with appropriate management should render this condition less hazardous.

The high incidence of biliary calculi in the population is resulting in operations upon the biliary tract being among those most often performed. Probably, such complications as biliary enteric fistula will be more frequently encountered by surgeons in the future. An awareness of the symptoms and clinical characteristics commonly associated with this condition should lead to accurate diagnosis and earlier indicated surgical treatment.

Although in a few instances some patients have had no symptoms, the majority have long had complaints referable to the biliary tract. Many on their own accord have accepted these as bearable and done nothing about them. Others have been encouraged by their physicians to try to control symptoms by diet regulation and to avoid surgical treatment. A few have had unsuspected gallstones revealed by a complete clinical evaluation. Because the calculi were not causing symptoms, the patients were advised to ignore them. In addition, there have been the occasional errors in the diagnosis which have led to delayed treatment.

First, in this group the patients are considerably older than patients with the uncomplicated and the more common forms of calcareous biliary tract disease. In the present series, the average age is 56 years and in the group reported by Byrne, the average age was 70. These patients have a higher incidence of associated medical illness and impairment of physiologic function than do those who are younger. The authors have observed that renal and cardiovascular disease have been of the greatest concern in their management. In addition to the disorders common to the older age group, there is damage to the liver so frequently present in the patient with long standing biliary tract disease. Ascending infection and low grade common duct obstruction are present in marked degree in most patients with biliary enteric fistulas.

The over all surgical problem of biliary enteric fistula requires consideration in the attack of any one of its facets. Certainly, intestinal obstruction due to a biliary calculus is a condition that requires immediate correction. This imposes a burden that usually contraindicates any additional surgery at the time. The existence of the biliary fistula is an indication for its correction which should be planned for and accomplished as early after its demonstration as the surgeon considers expedient. Failure to do so provides for further biliary tract changes and liver damage. Best results are obtained by adequate and complete surgical correction which includes cholecystectomy, common duct exploration and drainage, and repair of the enteric defect.

The diagnosis of a biliary enteric fistula without intestinal obstruction affords the surgeon the greatest advantage because the patient can be best

prepared for the indicated procedures. The realization of the hazards of attempting these when a fistula is unexpectedly encountered will enable him to arrive at the proper decision concerning immediate or delayed definitive therapy.

Air demonstrated within the biliary ductal system by x-ray examination should be considered indicative of biliary enteric fistula until proved otherwise. The triad of air in the biliary tract, intestinal obstruction, and a gallstone impacted in the terminal ileum is best treated by the surgical removal of the calculus.

Definitive surgical procedures should be done only when planned and with the patient well prepared. (Glenn, F., Mannix, H., Jr., Biliary Enteric Fistula: Surg. Gynec. & Obst., 105: 693-705, December 1957)

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### Fractures of Proximal Phalanges of Fingers

One of the most crippling fractures of a digit is the improperly reduced fracture of a proximal phalanx. Oblique fractures of this type are notorious in this respect because of the extreme difficulty in maintaining proper alignment of the fragments. These fractures are not only difficult to reduce, but a greater obstacle is adequate maintenance of the reduced fragments in their correct position. The comminuted type of fracture must be maintained in excellent alignment over a period of several weeks or even months.

Any marked degree of malalignment of fractured segments results in such crippling deformity and limitation of motion that frequently corrective osteotomy must be performed. There then results prolonged postoperative care and great economic loss.

Marked angulation of fractured segments at the level of the proximal phalanx accentuates and greatly magnifies limitation of motion because of its proximity to the fulcrum or "cam-action" of the metacarpophalangeal joint. Deformities in this area include overlapping, torsion deformities, and flexion in the wrong plane. Rotation deformities should be guarded against.

The usual deformity is palmar angulation of the proximal segment secondary to the pull or traction on it by the interosseous and lumbrical muscles. The distal fragment is then displaced dorsally. This deformity is maintained and/or usually exaggerated when a throat stick splint is applied to the injured digit fully extended. This type of fracture should never be treated with a throat stick splint.

The proper treatment is the application of a curved splint or roller bandage for a period of 3 to 4 weeks with the digit in "position of function." In the event of oblique fractures, traction over or against a molded splint

must be maintained with the direction of pull opposite the tubercle of the scaphoid bone at the wrist. In this manner, traction with counter-traction is constantly maintained. Slipping of oblique fractures and malalignment of comminuted fractures should be guarded against by frequent checkup roentgenographs. After reduction, frequent circulation observations relative to color and temperature are of paramount importance when constant traction is used and traction must be discontinued at once if there is impairment of circulation.

If muscle balance cannot be maintained by closed reduction and traction, one should not hesitate to carry out open reduction and stabilization of the fracture with a fine Kirschner wire. Tendons should not be disturbed with such a repair and the resultant earlier motion shortens the usual post-operative course. This type of repair is especially suitable to fractures with displacement because of the possibility of interposition of soft parts.

It must be remembered that fractures of proximal phalanges always involve the flexor tendon tunnel and exacting alignment is essential to insure a good result. Furthermore, bone spicules frequently tear the surrounding soft tissue. The corrective type of osteotomy that must necessarily follow this type of fracture when malaligned markedly prolongs total disability.

A minimum of 8 weeks is required for bony union following corrective osteotomy and several more weeks or even months of physiotherapy to restore a full range of motion and to allow the patient to make a good grip or fist.

Position of function (or rest) is essential to maintain proper balance between antagonists and protagonists in the treatment of fractured proximal phalanges. Exacting alignment of fractured segments is essential to prevent tendons from being fixed in callous formation as the floor of the phalanx is, in effect, the seat of the tendon sheath and naturally provides the gliding mechanism for the tendon.

A mere 15 degrees of dorsal angulation in a proximal phalanx fracture will be so accentuated or magnified as to prevent the finger tip from touching the palm of the hand. Exacting and correct primary treatment of these fractures will avoid secondary (corrective osteotomy) procedures, thereby greatly benefiting the injured employee in time, wages, and in his mental outlook. (Lamphier, T.A., Improper Reduction of Fractures of the Proximal Phalanges of Fingers: Am. J. Surg., 94: 926-930, December 1957)

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The printing of this publication was approved by the Director of the Bureau of the Budget, 16 May 1955.

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### Management of Abruptio Placentae

Premature separation of the normally implanted placenta, accidental hemorrhage, ablatio placentae, or as here designated, abruptio placentae has long been recognized as one of the most serious complications of pregnancy. This study is directed toward an evaluation of the conservative management of this obstetrical catastrophe and some of its common complications.

Disagreement exists among obstetricians regarding the clinical management of the moderate and severe cases of abruptio placentae. Most agree that the majority of these patients can be delivered successfully by the vaginal route; however, some advocate liberal use of abdominal delivery, while others subscribe to more conservative management, restricting the use of cesarean section to the occasional case. The authors have been consistently conservative at the Medical College of South Carolina in using cesarean section only in an occasional case. Recently, it was decided to review the last 100 cases of abruptio placentae to evaluate the results with this therapy. These 100 cases of abruptio placentae occurred in 7434 deliveries—an incidence of 1.3% or 1 case to every 74 deliveries.

Since the maternal and fetal prognosis as well as the method of treatment varies markedly with the severity of the disease, the 100 cases have been divided into groups of severity according to the classification of Page:

Grade 0. These are clinically unrecognized before delivery. (Diagnosis is based upon examination of placenta).

Grade 1. These show external bleeding only or mild uterine tetany, but no evidence of maternal shock.

Grade 2. In this group there is uterine tetany, ordinarily with uterine tenderness, possibly external bleeding, fetal distress (or death), but no evidence of maternal shock.

Grade 3. Here there is evidence of maternal shock or coagulation defect, uterine tetany, and intrauterine death of fetus.

In the present series of cases, Grade 0 was not considered. The 100 cases were classified according to severity as follows: Grade 1, 37; Grade 2, 38; Grade 3, 25.

Toxemia was present in a high percentage of cases, namely 45%. In cases of Grade 1 severity, preeclampsia was most common, whereas in Grade 3, hypertensive vascular disease with superimposed preeclampsia was most frequent.

Diagnosis of abruptio placentae is usually obvious except in Group 0 and Grade 1 severity; however, plans for diagnosis and treatment of third-trimester bleeding must be initiated as soon as the patient is admitted to the ward. Grade 2 often progresses to Grade 3. General physical

examination on admission should include a measurement of the height of the fundus from the symphysis pubis, and the girth of the abdomen so that any increase in the size of the uterus from concealed hemorrhage may be detected.

Venous blood should be obtained through a large caliber needle for immediate complete blood count and volume of packed cells, and the patient's blood should be typed and cross-matched for at least 1500 cc. of whole blood. Clotting time and "clot observation tests" should be done immediately and hourly until the patient is delivered or as long as indicated. Blood fibrinogen determination is preferred if available. With the same needle, glucose in water should be started so that a large vein is readily available if transfusion becomes indicated. Oxygen is started per nasal catheter, a physician is in constant attendance and the blood pressure is checked and recorded every 5 to 15 minutes.

If clinically and on sterile pelvic examination, abruptio placentae is diagnosed, the treatment for each grade of severity is briefly as follows:

Grade 1. Bed rest and observation except in a patient with a near-to-at-term fetus and a ripe cervix; then amniotomy is indicated. Blood replacement only if bleeding is excessive.

Grades 2 and 3. Oxygen, blood replacement, amniotomy, and in certain selected cases, a Pitocin infusion. Fibrinogen is made available. Cesarean section for fetal salvage in Grade 2.

The cesarean section rate for abruptio placentae was 3% in the present series. Cesarean section is indicated for fetal distress and uncontrolled hemorrhage in addition to the usual obstetrical reasons. From this study, cesarean section did not appear indicated merely to reduce the interval between the time of onset of abruptio placentae and delivery, although, ideally, delivery should be accomplished in 4 to 6 hours after the separation. In this series, of the 50 patients with abruptio placentae of Grade 2 or 3 severity who did not exhibit the previously mentioned maternal complications, only 19 were delivered in less than 6 hours, and 31 were delivered in more than 6 hours after the occurrence of the abruptio placentae, while the patients with the complications were delivered rather promptly. Cesarean section did not appear justified to secure delivery after maternal shock had been successfully combated, except for the indication mentioned. The policy of some clinics that abdominal delivery is necessary to empty the uterus if delivery does not occur in a number of hours appears unjustified.

Amniotomy is essential to hasten delivery and to decrease the intra-uterine pressure and thus the danger of hypofibrinogenemia from an infusion of thromboplastin. Even in the presence of an unfavorable cervix, amniotomy is usually followed by a rapid labor and delivery. In 5 cases in this series in which the cervix was relatively unfavorable (thick and

1 to 2 cm. dilated) the average time from amniotomy to delivery was 6 hours and 48 minutes. In 11 cases in which the cervix was favorable (50% effaced and 3 to 5 cm. dilated), the average time from amniotomy to delivery was 3 hours and 30 minutes. When labor was poor following amniotomy, however, and there was no contraindication, Pitocin (1 minim to 100 cc. of 5% glucose in water) intravenously was helpful in hastening delivery. Abruption placentae did not appear to be a contraindication to Pitocin therapy as has been suggested by others.

Blood loss should be combated with whole blood transfusions until the replacement is considered adequate. Retroplacental bleeding is difficult to estimate, thus the maternal blood loss may be underestimated and adequate replacement not given. It must be remembered that rapid labor cannot be expected to occur if the patient is left in shock and is hypovolemic. If these deficiencies are corrected, the uterine contractions will usually be strong and effective, resulting in an unusually short labor. (Hester, L. L. Salley, J., The Management of Abruption Placentae: Am. J. Obst. & Gynec., 74: 1218-1224, December 1957)

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#### Leukemia as a Dental Problem

During the last century, the dental profession has become increasingly aware of the importance of recognizing subtle alterations within the oral soft tissues that may herald the incipient stages of oral or systemic disease.

Of all the systemic disturbances with attending oral symptoms, the blood diseases in general and the leukemias in particular should be understood and readily suspected by the dental practitioner who, in many instances, is consulted first by the leukemic patient because of dental complaint.

Leukemia is a disease of unknown etiology and fatal termination which is due to a neoplastic change in the blood-forming tissues. In most instances, the change is accompanied by a flooding of the blood and tissues with an excess of white cells, including many immature or abnormal forms. It occurs in all human races, being more common in Caucasians (with Hebrews found especially susceptible to the chronic lymphatic type). It is seen more often in the male than in the female with no age group exempt. The disease is not thought to be transmitted from mother to child, although heredity may have some influence, especially in the lymphatic type. The incidence is higher in the first 5 years of life with most of the instances until the age of 20 of an acute nature. From ages 5 to 50, chronic myelogenous leukemia predominates, whereas after 50, the chronic lymphatic type is reported most frequently. It must be kept in mind, however, that acute forms may occur in older individuals and, conversely, myelogenous chronic forms may appear

in children. Monocytic leukemia which is more often acute than chronic favors middle age. The disease has a relatively low incidence with from 4000 to 6000 cases reported in the United States each year.

In acute leukemia, the first oral manifestations commonly arise in the region of the head and neck, with a possibility of all the oral structures undergoing change. It is obvious that the systemic characteristics of acute leukemia are primarily responsible for these changes which may appear as: (1) considerable pallor of the oral mucosa, (2) ulceration with necrosis of the mucous membrane, (3) a tendency to bleed without injury, (4) petechiae or ecchymotic regions, (5) hypertrophy with blunting of the interdental papillae which may be a primary enlargement of the tissues because of massive leukemic infiltration or a secondary inflammatory reaction to local irritation or both, (6) painful gingiva, (7) toothache because of the leukemic infiltration of the capillary bed in the dental pulp inducing by pressure the pain of pulpitis, (8) periodontal infections because of the lowered resistance of the infiltrated periodontal tissues to infection and irritation, (symptoms may arise that appear to be of a local periodontal origin, and they may be treated as such by the unsuspecting dentist), and (9) cyanotic discoloration of the gingival mucosa. These symptoms were found to appear alone or in combination in 40 patients with acute leukemia studied at Walter Reed Army Hospital. The type of leukemia was apparently not a determining factor in the oral picture observed because the symptoms were seen with equal frequency in all types of the acute form.

Leukemia, especially in the acute form, may affect the tissues in and around the oral cavity early in the course of the disease and prompt the patient to go to a dentist. A review of 99 instances of leukemia indicated that 55% of the patients with acute leukemia revealed definite oral symptomatology at the entrance physical examination. Only 15% of patients with chronic leukemia were so affected.

The dentist should be aware of the general and oral manifestations of this disease, and, therefore, be able to recognize or suspect its presence in patients coming for examination and treatment. A careful and detailed history, evaluation of the blood and differential counts, and a consultation with an internist are essential for the confirmation or denial of a diagnosis of leukemia.

Often, the oral lesions encountered in leukemia are aggravated by local factors superimposed on tissues infiltrated with leukemia. These regions can become extremely painful and are frequently the patient's chief complaint during hospitalization. Careful correction of the local conditions plus improvement of the oral hygiene, can effect great improvement of the oral condition and make the patient considerably more comfortable. Even though the victims of the disease face death in a matter of days, weeks, or months, it is the responsibility of the dental profession to help them, however and whenever possible. (Sinrod, H. S., Leukemia as a Dental Problem: J. Am. Dent. A., 55: 809-818, December 1957)

### Magnetic Removal of Foreign Bodies

In the past 50 years, many foreign bodies have been removed with forceps from the esophagus and many an open safety pin in the esophagus has been led with forceps into the inflated stomach, there reversed to be drawn back up the esophagus with its point harmlessly trailing. By means of forceps under fluoroscopic guidance, a number of things have been also recovered from the stomach.

The introduction of the Alnico magnet and its modifications by Equen made it possible to remove ferrous bodies from the duodenum through the stomach and esophagus.

Magnetic foreign bodies proximal to the ligament of Treitz can be most safely and rapidly removed from the gastrointestinal tract with the magnet.

It is also important to select the type of Alnico magnet best adapted to the individual case. The Equen magnet is presented as a cylinder from 3 to 6 mm. in diameter, from 30 to 60 mm. in length; some models are slightly bent near the exploring end. The first one was attached to a wire encased in a Levin tube; at the far end there was a hand bellows for the purpose of inflating the stomach through a hole in the tube near the magnet end. The magnet may be mounted on a flexible stylet, such as a ureteral catheter, for the removal of metallic objects in the tracheobronchial tree. A heavier magnet on a stiffer mount is more valuable in leading an open safety pin down the esophagus into the inflated stomach before hauling it back up.

For all work in the duodenum and for some in the stomach, the bent magnet is attached to a braided silk, radiopaque string; this string passes through a cap on the straight end of the magnet to make the pull more direct. Such a magnet may be washed down with an ice-cold soft drink which will also help carry it through the stomach, slightly distended by the release of the carbon dioxide.

Before inserting the magnet, adequate roentgenologic studies are required; these include the head, neck, and trunk. Because foreign bodies change their positions and because one needs to know what is going on, the operation must be done on a fluoroscopic table. Although in a recent 12-month period, 158 children were brought to the Ponce de Leon Ear, Nose, and Throat Infirmary, Atlanta, with a story of having swallowed some metal object which x-ray failed to reveal, attention should always be paid to such stories. Even in the absence of such a story, in the presence of persisting difficulty in swallowing, the child is entitled to an x-ray investigation.

The perfect relaxation afforded by a general anesthetic seems safe for the patient, although occasionally in well-poised adults the authors do without it.

A tracheotomy tray, laryngoscopes of various sizes, and other endoscopic instruments should be available in case of need.

Perhaps the most important thing for the smooth functioning of magnetic operations—as of so many other delicate procedures—is to have an experienced team accustomed to working together.

When a metallic foreign body is arrested in the esophagus, there is no question that it should be removed. The most dangerous foreign body encountered here is the open safety pin. When such a pin gets well beyond the cricopharyngeal constriction, the spring is of necessity down, the point up; attempts to pull it back up the esophagus may thus cause perforation of the wall of the esophagus and perhaps severe laceration; similar damage may be done if the patient tries to vomit up the pin.

When the pin is relatively small, however, it is often possible with forceps to pull the point of the pin into the esophagoscope and so retrieve it; the keeper end of the pin will do no damage to the elastic esophagus. It is possible either to cut the pin in the esophagus or to close it; once the pin is cut or closed, its removal is easily accomplished, but the first steps in each of these methods is technically difficult and full of danger to the patient.

Another standard method is to grasp the ring with forceps, lead it into the inflated stomach and there under fluoroscopic guidance reverse the pin so that when it is drawn back up the esophagus the point will trail behind innocuously. The chief objection to this method is the uncertainty of reversing the pin in the stomach; moreover, in attempting to do so, there is a possibility that the pin may be dislodged from the forceps.

The majority of foreign bodies reaching the stomach will pass through the gastrointestinal tract uneventfully. It is most surprising to see how many straight pins—even open safety pins and staples—have done so in the Infirmary a day or two after their ingestion. The authors, therefore, do not quarrel with those who advocate waiting a day or two to allow the forces of nature to propel the foreign body onward, provided it has no sharp point or cutting edge. In such cases, they may even allow the parents to take the child home after impressing upon them the importance of watching the stool for the reappearance of the foreign body, and explaining to them the signs of perforation and of obstruction. The difficulty is in getting the parents to accept this conservative proposition.

On the other hand, one can never tell when even a straight pin will result in disaster. The authors have never lost a case in which magnetic removal of a foreign body from the esophagus, stomach, or duodenum has been attempted, so they tend to go after most of them.

The x-ray is indispensable in locating a radiopaque foreign body in the gastrointestinal canal, although often more than one plate is necessary.

The fluoroscope is invaluable in duodenal work. If a foreign body becomes impacted in the duodenum, it can only be removed by use of the magnet or through an open operation. Such an operation requires section

of the abdominal wall; then the surgeon must grasp with his hand the relatively small—although thick walled—retroperitoneal duodenum. Then he must cut through the wall of the gut, remove the foreign body, and sew up the incision. Because of the disproportion between the size of the adult hand and the size of the upper abdomen of the small child, it is a difficult procedure and one that carries considerable risk. At best, the child must be given intravenous fluids for several days—no mean undertaking in the case of infants—and he must remain in the hospital for a week or more.

In contrast, the magnet may be expected to retrieve the foreign body in a very brief space of time and the child can usually go home in a couple of days.

With the Equen magnet, the authors have recovered 14 open safety pins and 14 other objects from the esophagus; in 189 cases, they have removed foreign bodies from the stomach, and 19 foreign bodies from the duodenum. There has been no death in the series. In two other cases, perforation of the duodenum required abdominal section, but both children recovered. (Equen, M., et al., *Magnetic Removal of Foreign Bodies from the Esophagus, Stomach, and Duodenum: Arch. Otolaryng.*, 66: 698-706, December 1957)

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### Succinylcholine in Cardiovascular Surgery

Recent published reports describing several anesthetic techniques for cardiac surgery have recommended that light planes of general anesthesia be employed. Although there has been no systematic comparison of anesthetic agents or techniques to support this recommendation, the clinical experience behind it has been large. Patients who were considered prohibitive anesthetic and surgical risks a few years ago have successfully undergone surgery for correction of their cardiac disease as a result, in part, of such anesthetic techniques. Most of this reported experience has been accumulated in the treatment of adults with acquired heart disease. There is a remarkable paucity of information concerning anesthetic techniques for surgery of congenital heart disease despite its 20-year history.

Light general anesthesia for cardiac surgery has been made possible by three innovations in anesthesia techniques: the use of curare-like drugs, the use of hyperventilation with controlled respiration, and the use of analgesic concentrations of general anesthetic agents. In the absence of much precedence, the authors have devised and successfully used an anesthetic technique for infants and children which incorporated these innovations. This technique which uses succinylcholine with analgesic levels of ether and controlled respiration, allows ideal operating conditions for the surgeon

even in the smallest patients with minimal cardiac effects of anesthetic agents. This report describes this anesthetic technique, presents the results of its use in 150 patients, and presents data on the relative resistance of infants and children to the effects of succinylcholine.

To prevent dehydration, small children were allowed liquids up to four hours before surgery. In older children, this period was extended. In order that light levels of general anesthesia could be used, both infants and children were generously premedicated. Drugs were prescribed on a weight basis. The following drugs and average doses were used: pentobarbital sodium, 2 mg. per pound by mouth, or 3 to 4 mg. per pound by rectum; chloral hydrate, 25 mg. per pound by rectum; intramuscular meperidine, 1 mg. per pound of body weight less ten pounds; and intramuscular scopolamine or atropine, 0.1 mg. per 20 pounds of body weight. Pentobarbital or chloral hydrate was given three hours preoperatively. Most children arrived at the operating room asleep, but able to respond to the stimulus of being moved or manipulated without crying or excitement.

Fifty percent or less cyclopropane with oxygen was used for induction which required less than one minute. Because of its potency, the use of cyclopropane avoided the breath-holding, respiratory obstruction, and hypoxia often associated with open drop techniques. This was important because many of these patients were already hypoxic as a result of their heart disease. Induction was accomplished with a to-and-fro absorption system selected in size according to the patient's size. A semiclosed technique was used with a gas flow of 1500 to 3000 cc. per minute. Originally, children were intubated under deep cyclopropane anesthesia. This procedure was so often associated with alarming bradycardia and at times with nodal cardiac rhythm that it was abandoned and the procedure was adopted of maintaining light anesthesia with cyclopropane until an infusion is started by cutdown. A single dose of succinylcholine (10-30 mg.) was then given intravenously to facilitate intubation.

The use of succinylcholine for intubation also allowed the insertion of the largest possible bore endotracheal tube into the trachea. This was important when an insufflation system was to be used for controlled respiration. The pharynx and cords were sprayed with 4% cocaine and the endotracheal tube was lubricated with a topical anesthetic lubricant. Following intubation, children weighing less than 35 pounds were ventilated through an Ayre T-piece insufflation system. In children from 40 to 80 pounds, a to-and-fro absorption system was used. A circle absorption system was used in children over 80 pounds. Following intubation, ether-oxygen was begun and the percentage of cyclopropane in the mixture was gradually reduced over a period of 5 minutes. An 0.2% solution of succinylcholine in 5% dextrose in water was started intravenously when respiration returned. Apnea was again produced and, thereafter, succinylcholine was used intermittently in sufficient dose to maintain apnea. The periodic

return of diaphragmatic contractions was used as a check against overdosage. Respiration was controlled with light ether anesthesia from the beginning of operation until the start of closure of the chest. Ventilation was maintained at the maximum rate and depth which did not interfere with the surgical procedure. Continuous apnea permitted an absolutely quiet mediastinum and diaphragm much appreciated by the surgeon. Within 10 minutes from cessation of the succinylcholine drip, respiratory activity returned and by the time the operation was completed (or before) children were moving and breathing spontaneously and adequately. If necessary, 50% nitrous oxide with oxygen was administered for closure of the chest.

The anesthetic technique and agents reported are not new in anesthesiology. However, their application to cardiovascular surgery in infants and children possesses certain obvious advantages which have proved highly successful for the authors. In using cyclopropane for induction, frequently they have observed arrhythmias, including severe bradycardia, premature ventricular contractions, nodal rhythm, and bigeminy. All these responded promptly to decreasing the concentration of cyclopropane. Similarly, arrhythmias occurring on manipulation of heart under ether anesthesia were readily reversed by elimination of ether with oxygen. The authors repeatedly observed that the heart became more amenable to manipulation when the anesthetic agent was decreased or eliminated. This was also possible when succinylcholine could be used to maintain proper operating conditions. In treating arrhythmias, procaine amide was used only twice and atropine three times early in this series of patients. The authors believe that oxygen is the best drug for treatment of arrhythmias. This anesthetic technique allows the use of at least 50% oxygen for induction of anesthesia and at least 90% during maintenance of anesthesia.

This method also allows the patient to be awake and in control of his reflexes immediately at the end of surgery. Congestive heart failure, circulatory collapse, pulmonary edema, and cerebral anoxia are not rare complications of surgery in these patients in the immediate postoperative period. It is important that these complications be promptly recognized and treated. This can be most readily done when the signs and symptoms of such complications are not confounded by the persisting effects of anesthetic agents. All drugs administered during this anesthetic technique (except for premedication drugs) are practically eliminated or rendered inactive by the time the patient reaches the recovery room.

This method which utilizes light general anesthesia, controlled respiration and succinylcholine administration has these advantages: more than 90% oxygen can be used throughout most of the anesthetic period, extensive manipulation of the heart can be accomplished without precipitation of dangerous arrhythmias, ideal operating conditions are provided for the surgeon, and the patients are completely awake at the end of the operative procedure. (Telford, J., Keats, A. S., Succinylcholine in Cardiovascular

Surgery of Infants and Children: Anesthesiology, 18: 841-848, November-December 1957)

\* \* \* \* \*

### Long-Term Anticoagulant Therapy

Now that the use of anticoagulants has been firmly established, two questions are becoming more insistent. One of these relates to the practicability of using anticoagulants in the home or with ambulatory patients; the other to the long-term prophylactic use of these agents.

This is a report of administering Dicumarol (bishydroxycoumarin) to 23 patients, not hospitalized, for periods of time ranging up to 9 years. It is intended to show the practicability of such treatment in rural general practice.

Rather early in the clinical investigation of anticoagulants, it became apparent that however much good might be done by their short-term use, there was a large field of potential usefulness in their long-term administration, and it was tempting to envision a reduction in thromboembolic disease through this means.

The problems involved in the use of anticoagulants are many. Reference is made primarily to those that are more or less peculiar to long-term nonhospital use. These include such considerations as the willingness of both doctor and patient to undertake the exacting continuing responsibility of carrying out a program that requires almost constant attention; the mechanics of obtaining blood for prothrombin tests, charting results, and estimating proper dosage schedules; and close following of each case (mostly by telephone) with constant alertness to identify symptoms that might suggest hypoprothrombinemia or other complications.

It must be clearly understood that the sine qua non of anticoagulant therapy is a reliable laboratory. When treating patients not in a hospital this involves some means of getting blood promptly to the laboratory at whatever intervals are required in each case. While it is seldom necessary to have daily prothrombin levels in order properly to administer Dicumarol—as has often been claimed—it is always necessary to have tests either daily or nearly that often at the beginning of therapy, and the intervals can be lengthened only as individual patient's pattern of Dicumarol effect becomes manifest. If a patient is not relatively easy to stabilize, long-term therapy may be entirely impracticable. Even the most stable patients occasionally shift for no apparent reason making it mandatory in all cases never to exceed a two-week interval between tests.

When a patient is acutely ill and requires daily visits, it has seldom been difficult to arrange visits at a time of day when blood could be drawn and sent to the laboratory. When the patient becomes ambulatory, he can

go to the laboratory himself or can come to the office at a time when it is convenient to get the blood to the laboratory. In all cases, the report is telephoned, whereupon the author sets up the dosage schedule from that day until the time set for the next test. All patients are meticulously instructed that each dose of Dicumarol is specifically and individually prescribed and under no circumstances is a patient to take any Dicumarol dose without a specific order for that particular dose.

Should "bedside" methods of determining prothrombin time prove to be reliable, dependence on a laboratory may become less essential. However, until much more evidence accumulates, confidence should be placed only in well established methods which at best are none too good.

Of the twenty-three patients, four are still under treatment with Dicumarol; two died while taking the drug; the remainder discontinued it. The reasons for stopping it varied and are analyzed briefly because this sheds some light on the problems involved in this program. In two of the earliest cases, long-term therapy was not considered. In two cases of diagnostic error, naturally the drug was discontinued as soon as it became apparent that it was not indicated. Incidentally, by good fortune one patient with dissecting aneurysm never achieved the "desired" prolongation of prothrombin time. Two patients moved away making further supervision impossible. In four cases, the patient lived at such a distance as to make continuing the program impracticable. Another four patients didn't want the trouble or expense. One was stopped because of metastatic carcinoma making the maintenance of therapy somewhat pointless. This left only two who were stopped because of hemorrhagic complications; in both of these cases, this was minor in nature. In one, hemorrhagic periarthritides developed and in the other, there was hypotherbinemia by laboratory test and a variety of puzzling symptoms, but no overt hemorrhagic phenomena.

To summarize, there were only two cases in which the drug was discontinued because of factors inherent in the nature of the therapy. In all of the others, it was stopped because of some external factor pertaining to convenience, geography, or expense, or in three cases, because the drug did not seem indicated or was contraindicated.

It is generally agreed that certain conditions are absolutely indispensable to proper and safe anticoagulant therapy. These include (1) accurate diagnosis of a condition in which thromboembolism constitutes a real hazard; (2) intelligence and willingness to take the necessary trouble to carry them out, on the part of the patient; (3) thorough familiarity with the procedures and willingness to take the necessary trouble to carry them out, on the part of the doctor; and (4) availability of a reliable laboratory. Experience with this therapy in the 23 nonhospitalized patients reported illustrates its practicability in rural general practice. (Putnam, W.F., Long-Term Anticoagulant Therapy: GP, XVI: 79-82, December 1957)

\* \* \* \* \*

Occupational Medicine and Dispensary  
Division Established

A Bureau of Medicine and Surgery Directive of 18 October 1957 established an Occupational Medicine and Dispensary Division (Code 73) whose functions will be those of the former Occupational Health Branch and the former Dispensary Division.

ARTICLES FROM THE NEW DIVISION WILL APPEAR IN THE MEDICAL NEWS LETTER IMMEDIATELY FOLLOWING THE GENERAL SECTION.

\* \* \* \* \*

Ice Crystal Formation in Tissues

(The findings and concepts presented in this original article are of fundamental importance in the pathogenesis, treatment, and prevention of local cold injury. The author is an authority on the biophysics of freezing.)

When one speaks of freezing mammalian tissue, many mental images may be brought to mind; The physician may recall the black mummified toes of the frostbite victim; the research scientist might be more inclined to think in terms of the preservation of tumors or blood by rapid freezing; while more probable for most is the image of the frozen T-bone steak in the family deep freeze. These are certainly all instances of the freezing of mammalian tissue, but are they comparable to one another? Is freezing a uniform phenomenon or does its mechanism vary depending on the subject and the manner in which it is applied?

In attempting to answer these questions in the laboratory, it can easily be shown that variations in the rate of freezing can make a vast difference in the result. Experimental evidence also suggests very strongly that different tissues vary in their response to freezing in terms of their susceptibility to injury. Although the whole story is far from clear as yet, it is possible to summarize to a fair degree the phenomena which take place when mammalian cells are subjected to freezing and thus to clarify somewhat the similarities and differences of the many kinds of freezing to be met with both in the field and in the laboratory.

One of the most important observations to be borne in mind is that freezing is a physical phenomenon. It is, by definition, a process involving crystallization; in the case of tissue, the crystallization of water to form ice. The ice formed is composed of pure water which is withdrawn from the solution in and around the cells. There are two obvious effects of such crystallization. First, the ice crystal is a physical object. Its size and location will depend upon the mode of freezing, as will be

shown subsequently. If it is large or suitably located, it may have deleterious effects upon a cell or tissue solely as the result of its existence. The ice crystal per se is presumably inert, because the water of which it is made is no longer osmotically active. Also, ice crystals grown in tissue grow in the direction of least resistance and do not characteristically display sharp corners or points. The ice crystal, then, can be considered merely as an inert foreign body.

The second effect of freezing results from the fact that water has been removed from the tissue milieu. This is, in essence, a dehydration and the only difference between the dehydration of freezing and that of drying is the fact that the water is secreted throughout the tissue as ice crystals rather than being completely removed. These, then, are the two primary causes of tissue injury as the process is currently understood: ice crystal-foreign body formation and dehydration.

Crystallization and its attending dehydration are, as pointed out previously, physical phenomena which invariably occur when freezing takes place regardless of the circumstances. Variations in the end result of freezing occur because of differences in the rate of freezing or variations in the physical characteristics of the material frozen. Let us first consider the effect of altering the rate of freezing. When a tissue or a cell suspension is frozen slowly, the ice crystals are found to develop exclusively in the extracellular spaces. The slower the freezing takes place the fewer are the crystals which develop and the larger their ultimate size. These extracellular crystals withdraw water both from the extracellular spaces and from within the cells with the ultimate result that huge crystals may be formed with the dehydrated cells sandwiched between them.

As the rate of freezing is increased the ice crystals become more numerous and smaller in size. With further increase in freezing rate a point is reached at which the tendency for extracellular crystal formation is no longer dominant and intracellular ice crystals are seen to form. The crystals produced at this critical rate are already quite small, in the order of 10 microns in size, so that the tissue architecture is not seriously distorted by their presence as it is from slow freezing. With increasing rates of freezing, the crystals continue to be smaller in size until ultimately they appear to vanish with the creation of a noncrystalline or glass ice. The rates of freezing necessary to achieve this state are exceedingly high and can be produced only with great difficulty in the laboratory. In fact, the speed at which intracellular crystals are produced is quite rapid by conventional standards. It is estimated that a man exposing his finger to a 40-mile per hour wind at  $-40^{\circ}$  C. could receive a freezing injury in which some intracellular crystallization might result, presuming an absence of circulation in the finger. It is, then, apparent that clinical injuries fall well within the slow freezing range as does, in fact, most experimental and commercial freezing.

Returning to the effect which freezing may have upon a tissue, two phenomena must be considered: The physical presence of the extracellular ice crystals and the dehydration which has occurred. The distortion which may be produced by ice crystals is quite astounding when one studies histological sections which have been especially prepared to retain the tissue architecture as it existed while frozen. Crystals formed at moderate rates of freezing may be many times the size of the individual cell, while the cells are compressed between them in indistinguishable bundles. The appearance of such a section would appear to supply fully adequate evidence for the physical destruction of tissue through freezing, and it is quite amazing to discover that such is not the case. It has been most adequately demonstrated—both in the laboratory and from clinical case histories—that freezing is not necessarily lethal to tissues provided the exposure has not been excessive. Thus, it becomes inescapable that extracellular crystal formation per se is not necessarily lethal to animal cells.

The answer to the cause of freezing injury apparently lies in the dehydration produced by ice crystallization. It has been thoroughly demonstrated for blood that the primary agency for injury is the increased salt concentration which results from the dehydration. It has been shown that increasing the salt concentration of blood at room temperature causes destruction of the cells to the same extent as a similar salt concentration resulting from freezing. The manner in which the high salt concentration injures the cells is not fully understood, although at least one important mechanism appears to be the denaturation of lipoproteins. The denaturation of cell constituents by high salt concentration is a biochemical reaction. This reaction will take place at a given rate depending on the concentration of the salt and the temperature at which the reaction takes place.

This provides an explanation for the observation that tissues can tolerate freezing provided the exposure is not excessive. Tissues which are frozen to only one or two degrees below the freezing point have only 60 to 70% of their water sequestered in ice crystals. Although this results in a deleterious concentration of salts, it is not rapidly lethal. Freezing must be  $-3^{\circ}$  to  $-5^{\circ}$  C. or lower in order to remove sufficient water to cause a rapidly developing cell injury. However, even at such low temperatures, cell destruction does not appear to be instantaneous and a sufficient number of animal cells to permit tissue survival may recover following an exposure at  $-10^{\circ}$  to  $-15^{\circ}$  C. for periods up to one-half hour.

These, then, are the physical phenomena which take place during a tissue exposure which involves freezing. Large ice crystals are formed in the extracellular spaces and the cells are subjected to acute dehydration which results in a biochemically injurious concentration of electrolytes. This information reveals several things about the clinical injury.

In the first place, it is necessary to discriminate between injuries in which ice crystallization formation has occurred and those in which it has not occurred. The conventional terminology does not adequately define this difference, because frostbite which is presumed to be a freezing injury is generally divided into four degrees of which first degree frostbite involves no freezing and second degree shows only superficial freezing.

It is clear from an understanding of the physical events that an injury is being dealt with which takes place during the exposure at a rate dependent on the temperature of exposure. This latter is an extremely difficult variable to quantitate, inasmuch as the temperature of the exposure refers to the temperature of the tissue while frozen. This will be dependent on many physical aspects of the circumstance which include not only the air temperature, but the amount of wind and the amount of insulation available. Even a wet mitten or a frozen boot provides some insulation and can substantially reduce the rate of heat transfer. However, these are questions which do not particularly concern the clinician. He is faced with an exposure to cold which has already taken place. He is faced with an injury which has proceeded at a variable rate depending on the temperature of the tissues and for which the most important therapy is termination of the exposure. Some tissues may have been irrevocably destroyed and others not; it is impossible to predict in advance the exact extent of the injury. In any case, this is unfortunately an injury for which no therapeutic measure has as yet been conclusively demonstrated to be of value in man.

Although the laboratory may have as yet offered no real assistance to the clinician, it can at least provide him with some understanding of the mechanism of freezing injury in tissue, demonstrate to him that this is a very real physical or biochemical injury, and that he should be neither surprised nor discouraged at being unable by heroic measures to prevent the progression of severe frostbite through circulatory stasis to tissue death. (H. T. Meryman, NMRI) (Occ-Disp. Med. Div, BuMed)

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### Technical Hygiene in Occupational Health

The control of poisoning and similar conditions caused by physical or biological reasons in an industrial environment is based on periodical examinations of exposed groups and air sampling.

Following the first method, signs and symptoms are as a rule found when the individual already shows some pathological reaction, therefore, the danger signal comes too late in these cases. The source of poisoning

in cases of air sampling may be missed when the intake of noxious material is effectuated through the mouth or the skin. The development of reactions based on the estimation of abnormal metabolic products as a consequence of mechanisms of detoxication permits the industrial physician in a number of cases to obtain an important insight of the environmental conditions in the workshop.

Synchronized comparison of the results of air analyses and of the periodical examinations of exposed workers can give valuable information about the importance and effects of the exposition at high concentrations during short lapses of time (peakloads), and permits the industrial physician to give economically sound advice.

The collection and critical evaluation of these medical, hygienic, and technical data requires the organization of a specialized committee, including one or more industrial physicians (toxicologists), industrial hygienists (chemists), and engineers. (Burger, G.C.E., Frant, R. (Netherlands), Work of a Committee on Technical Hygiene in an Occupational Health Service: Summaries of Papers presented at the XII International Congress on Occupational Health, Helsinki, Finland, 1 - 6 July 1957, II: 16. (Occ-Disp. Med. Div, BuMed)

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#### American Board of Obstetrics and Gynecology

The next scheduled examinations (Part II), oral and clinical for all candidates will be conducted at the Edgewater Beach Hotel, Chicago, Ill., by the entire Board from May 7 through 17, 1958. Formal notice of the exact time of each candidate's examination will be sent him in advance of the examination dates.

Candidates who participated in the Part I examinations will be notified of their eligibility for the Part II examinations as soon as possible.

Office of the Secretary: Robert L. Faulkner, M.D.  
2105 Adelbert Road  
Cleveland 6, Ohio  
(ProfDiv, BuMed)

\* \* \* \* \*

#### Change of Address

Please forward requests for change of address for the News Letter to: Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

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IN MEMORIAM

|  |                   |
|--|-------------------|
| RADM George Carroll Thomas MC USN (Ret)    | 17 November 1957  |
| CAPT Roy Foster Cantrell MC USN            | 1 October 1957    |
| CAPT Joseph Rue Plater DC USNR (Active)    | 26 October 1957   |
| CAPT Louis J. Rhen DC USN                  | 12 December 1957  |
| CAPT Lewis Hawley Wheeler MC USN (Ret)     | 29 August 1957    |
| CAPT James Henry Walvoord MC USN (Ret)     | 21 November 1957  |
| CAPT Marion Twitty Yates MC USN            | 14 December 1957  |
| CDR Earl Bradley Erskine MC USN (Ret)      | 26 October 1957   |
| LCDR William Gladstone Bartle HC USN (Ret) | 9 December 1957   |
| LCDR Mary V. Ennis NC USN (Ret)            | 22 October 1957   |
| LCDR Emanuel Mendrala MSC USN (Ret)        | 17 September 1957 |
| LCDR James E. Root MC USN (Ret)            | 19 November 1957  |
| LCDR Esther Luella Schmidt NC USN          | 25 October 1957   |
| LT Bernedine Mary Castrodad NC USN (Ret)   | 25 September 1957 |
| LT Jack Kaufman Goldsby HC USN (Ret)       | 19 November 1957  |
| LT James Aul Reedes MC USNR (Active)       | 5 October 1957    |
| LT Jesse Jessup White HC USN (Ret)         | 28 September 1957 |
| LTJG Alfred E. Cronkite MC USN (Ret)       | 27 September 1957 |

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From the Note Book

1. ChMedServWmnt A. C. Lembeck, USN, recently accompanied a film production unit from Odyssey Productions of New York to Alaska, Thule, and the North Pole. The purpose of the trip was to film an hour long color television program, "The Arctic," to be included in the CBS Television series, "High Adventure with Lowell Thomas." In addition to the film crew, the group included Lowell Thomas; Rear Admiral D. B. MacMillan, USNR (Ret); Col. Bernt Balchen USAF (Ret); Sir Hubert Wilkins; and Lowell Thomas, Jr., who is producer of "The Arctic." The film concerns the role the airplane plays in the settlement, everyday life, and defense of Alaska. It also includes shots of Navy MSTS supply ships in the ice north of Alaska. (TIO, BuMed)
2. Captain J. V. Niiranen DC USN, Head of the Training Aids Department of the U. S. Naval Dental School, NNMCC, Bethesda, presented an illustrated lecture on "Casualty Treatment" and demonstrated the use of facsimile body parts for instructional purposes at the Georgetown University Medical Center, Washington, D. C., December 17, 1957. (TIO, BuMed)

3. The National Cancer Institute has just issued a cumulative index of the Journal of the National Cancer Institute for the period 1940-1956. Included are a subject index with comprehensive cross references, an author index, and a listing of current nomenclature for certain chemical compounds mentioned in the index. This should be a valuable addition to those libraries which have files of the Journal, as well as to research scientists in general, because it gives a comprehensive view of a large segment of research in the field of cancer during the 16-year period. (PHS, HEW)

4. Reports from most States indicate a decreasing incidence of influenza and influenza-like disease for the week ended December 7, 1957. Some stated that incidence was only slightly above the normal seasonal level, while others indicated that school and industrial absenteeism rates have declined to normal levels.

The number of deaths from all causes in 114 large cities was 12,696 and deaths from influenza and pneumonia in 108 cities totaled 581. This apparent increase over the previous week when the numbers reported were 10,491 and 557, respectively, undoubtedly occurred because of the lag in reporting over the Thanksgiving Day holiday. The average numbers for the 2 weeks are below those for the week ended November 23. (PHS, HEW)

5. Eight clinical types of ambiguities of sexing are classified and synopsized with their chromosomal, morphological, and endocrinological characteristics. These types are reconciled with Jost's theory of the role of the fetal testis in sex differentiation. Sex chromatin data are of ancillary, but not primary, value in the differentiation of these types. (Am. J. Obst. & Gynec., December 1957; E. C. Hamblen, M.D.)

6. The breasts of 100 women were studied grossly and microscopically. All breasts had been considered entirely normal on clinical examination. A high incidence of certain of the tissues considered to be part of the complex of chronic mastitis was disclosed. It is concluded that the mere qualitative presence of blunt-duct adenosis, apocrine epithelium and intraductal epithelial hyperplasia is insufficient to warrant such tissue being considered diseased. (Am. J. Path., November - December 1957; P. T. Sloss, M.D. et al.)

7. Calcification of renal papillae is presented as a significant roentgen sign in the diagnosis of necrotizing papillitis. Calcified papillae are best demonstrated by laminagrams of the kidney. (Am. J. Roentgenol., December 1957; L. B. Lusted, M.D., et al)

8. Twelve patients suffering from pulmonary emphysema, as well as tuberculosis, have been studied before, during, and after anesthetization for

pulmonary resectional surgery. Arterial blood samples were analyzed to ascertain changes in acid-base balance. The method demonstrates that a positive-negative respirator provides adequate alveolar ventilation in such patients. (Anesthesiology, November - December 1957; K. L. Kiebecker, M.D., J. K. Curtis, M.D.)

9. The treatment of the severely depressed and comminuted fracture of the tibial condyle presents a difficult problem. Reduction of the finely comminuted and cartilaginous fragments is impossible. Elevation of the depressed area is not feasible. An operative method is described, utilizing the anterior superior iliac spine, to replace the destroyed condylar surface. (Am. J. Surg., December 1957; H. G. Lee, M.D.)

10. This review indicates that the majority of patients suffering from biliary tract disease are over 50 years old. The majority of deaths following operation occur in patients over 50 years old. The mortality can be reduced by earlier diagnosis and by more prompt eradication of the disease. (Surg. Gynec. & Obst., December 1957; J. R. Babcock, M.D., R. C. Eyerly, M.D.)

11. Corticosteroids have a definite place in the treatment of otolaryngologic conditions which require short-term therapy or topical treatment. Intranasal hydrocortisone alcohol spray is efficacious in the treatment of seasonal or perennial allergic rhinitis and allergic rhinitis with polyps. (Arch. Otolaryng., December 1957; L. E. Silcox, M.D.)

12. Major problems associated with resection of aneurysms of the proximal portion of the aortic arch are concerned with the rapidly fatal consequences of arrest of circulation through this vital segment of the aorta upon the heart and central nervous system. The use of a temporary cardiopulmonary bypass with the artificial heart-lung apparatus appears to control these problems. (Surg. Gynec. & Obst., December 1957; M. E. De Bakey, M.D., et al.)

13. Eight cases of spontaneous recovery of 7th nerve function following segmental operative defects of the 7th cranial nerve are reported. These cases make up 28.5% of 28 determinate cases. (Ann. Surg., November 1957; H. Martin, M.D., J. T. Helsper, M.D.)

14. The therapy of hypertensive states in pregnancy from the internist's standpoint is discussed in GP, December 1957; F. A. Finnerty, Jr., M.D., J. H. Buchholz, M.D.)

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BUMED INSTRUCTION 11330.1A

29 November 1957

From: Chief, Bureau of Medicine and Surgery  
Chief, Bureau of Yards and Docks  
To: All Stations and Shore Based Fleet Commands  
Subj: Adjustment of fluoride content of communal water supplies at  
military installations  
Encl: (1) DodInst 6230.2 of 30 Aug 1956, same subj.  
(2) Action Required of the Directors, Overseas Division, Bureau  
of Yards and Docks; Area Public Works Officers; and District  
Public Works Officers in Connection with Projects for Fluoride  
Adjustment of Water Supplies at Navy and Marine Corps Shore  
Stations

This instruction outlines procedures for development, evaluation, and accomplishment of fluoridation and defluoridation projects in accordance with enclosure (1). BuMed Instruction 11330.1 and BuDocks Instruction 11330.7 are canceled.

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BUMED INSTRUCTION 1520.2E

9 December 1957

From: Chief, Bureau of Medicine and Surgery  
To: Ships and Stations Having Dental Corps Personnel  
Subj: Graduate and postgraduate training for officers of the Dental Corps,  
U. S. Navy and U. S. Naval Reserve, on active duty  
Ref: (a) Art. 6-82, ManMed

This instruction provides information regarding graduate and postgraduate training for officers of the Dental Corps, U. S. Navy and Naval Reserve, on active duty. BuMed Instruction 1520.2D is canceled.

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BUMED NOTICE 6000

11 December 1957

From: Chief, Bureau of Medicine and Surgery  
To: Commandants of Naval Districts and River Commands, Continental  
U. S., and Chief of Naval Air Training

Subj: Joint utilization of military health and medical facilities and services

Ref: (a) BuMedInst 6000.1 of 29 Dec 1955

This notice reiterates the Department of Defense policy concerning optimum joint utilization of military health and medical facilities and services, and recommends that the utilization of the nearest Armed Services medical facility which is capable of providing the required care and disposition be encouraged wherever it is practicable. Compliance with the above will not only reduce the time lost from duty by military personnel, but will eliminate much of the criticism levied on the military hospital system by civilian and government groups.

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**DENTAL**



**SECTION**

Postgraduate Course Completed at NDS

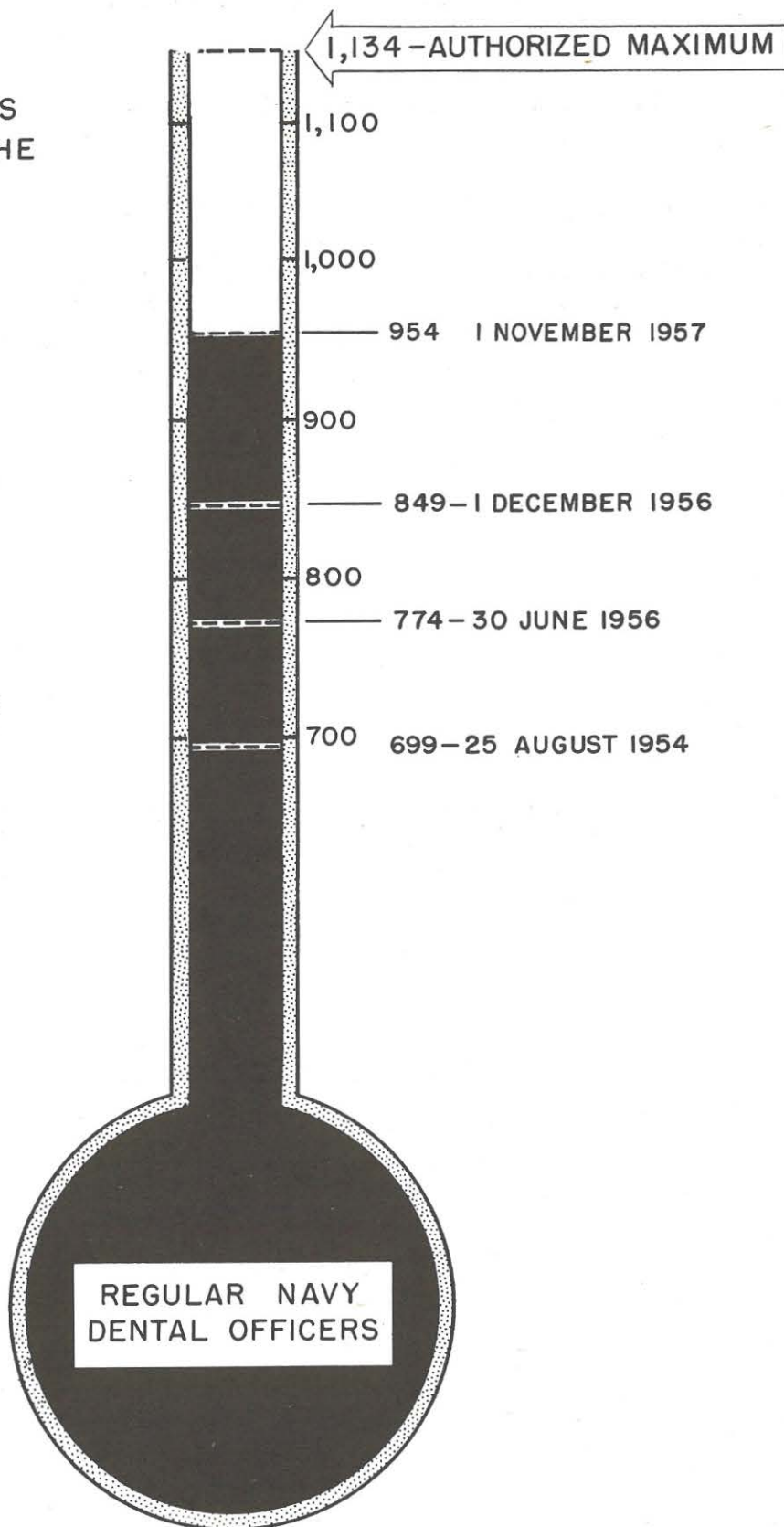
Eight career Dental officers of the Air Force, Army, and Navy recently completed a one-week postgraduate course of instruction in complete dentures at the U. S. Naval Dental School, National Naval Medical Center, Bethesda, Md. The course which was under the supervision of Captain R. B. Lytle, DC USN, consisted of lectures, informal seminars and demonstration. Emphasis was placed on the practical aspects of taking accurate impressions, recording of jaw relationships and making occlusal corrections. This course was the first of a series of short postgraduate courses being offered at the Dental School during the current school year. The course will be repeated in May 1958.

The Dental officers completing the course were Captain R. L. Coombs DC USN, Captain I. G. Edwards DC USN, Captain R. C. Harwood DC USN, Captain T. C. Sample DC USN, Captain W. M. Thomas DC USN and

# DENTAL OFFICERS APPOINTED IN THE U.S. NAVY\_\_

DURING PERIOD  
1 SEPTEMBER 1957 TO  
1 NOVEMBER 1957

JOHN "T" ANDERSON  
WILLIAM P. ARMSTRONG  
RAY K. ATKINSON  
PAUL E. BARROW  
KENTON T. BRADLEY  
VINCENT C. CARANANTE  
JAMES H. CHARLES, JR.  
JAMES T. CHRISTIAN  
CHARLES E. COWEN  
ROBERT D. CULLOM  
EUGENE S. DVOROVY  
JAMES D. ENOCH  
ROBERT E. GEHRMAN  
WILLIAM V. GIBSON  
JAMES E. HAMNER III  
ALBERT HERR  
EDMUND M. HOLLAND  
WILLIAM G. HUTCHINSON  
ROSCOE P. HYLTON, JR.  
KENNETH K. KANESHIRO  
JAMES E. KLIMA  
JOHN R. LAVERINE  
NORMAN K. LUTHER  
DAN MARIT  
DONALD E. MEISTER  
JOHN W. PASH, JR.  
SIDNEY RAYBIN  
RALPH E. SAND  
ROBERT E. SHIRLEY  
ROBERT H. SPICER  
JOSEPH C. SPOTO  
GEORGE K. THOMAS  
MAURICE E. WESTCOTT  
JESSE L. YARBROUGH



Major R. E. Whetaley DC USA, Captain B. M. Carr DC USAF, and Lieutenant W. P. Eckstein DC USN.

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### Operation Build-Up

As shown on foregoing chart, the strength of 954 Dental officers in the U. S. Navy Dental Corps on November 1, 1957, gives evidence of the continued success of the "Operation Build-Up" which was initiated to acquaint qualified civilians and Reserve Dental officers with the opportunities and advantages of career in the Regular Navy.

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## RESERVE SECTION

### Creditable Correspondence Courses for Inactive Reserve Officers

The below list of Officer Correspondence Courses is creditable for the promotion of inactive Naval Reserve, Medical, Dental, Medical Service, and Nurse Corps officers.

The list is divided into three main areas of study: executive, operations, and technical. Under these area headings you will note the words "All," (R), and "None." The word "All" means that all inactive Reserve Medical Department officers in this grade of promotion category may take these courses. The letter (R) indicates that these courses are recommended based on those courses which Reserve officers on full time active duty must take in order to earn exemptions from examinations. You are not required to take these courses as recommended. The word "None" means that no officers in that category are eligible for the particular course.

Note: Inactive Reserve Medical Department officers presently enrolled in any correspondence course may receive credit for such course providing completion is accomplished prior to 1 July 1958. You are not required to take a specific number of courses, however, the courses completed must provide the required number of promotion points needed to supplement the promotion points that you have earned through other means.

| <u>CORRESPONDENCE COURSES</u>   | <u>NAV PERS<br/>NUMBER</u> | <u>PROMOTION<br/>POINTS</u> | <u>ENS-LTJG-LT</u> | <u>LCDR-CDR</u> |
|---|----------------------------|-----------------------------|--------------------|-----------------|
| <u>EXECUTIVE AREA</u>   |                            |                             |                    |                 |
| Education and Training, Part I  | 10965                      | 14                          | All (R)            | None            |
| Education and Training, Part II   | 10966                      | 10                          | All (R)            | None            |
| Foundations of National Power   | 10770-A                    | 24                          | None               | All (R)         |
| International Law   | 10717-A                    | 24                          | None               | All             |
| International Law   | *NWC                       | 36                          | None               | All             |
| International Relations   | *NWC                       | 36                          | None               | All             |
| Leadership  | 10903                      | 10                          | All (R)            | None            |
| Military Justice in the Navy  | 10993                      | 24                          | All (R)            | All (R)         |
| Navy Public Information   | 10720                      | 12                          | All                | All (R)         |
| Navy Regulations  | 10740-A                    | 24                          | All (R)            | None            |
| Organization for National Security  | 10721                      | 10                          | None               | All (R)         |
| Personnel Administration  | 10968                      | 12                          | All                | All (R)         |
| Security of Classified Matter   | 10975                      | 6                           | All (R)            | None            |
| <u>OPERATIONS AREA</u>  |                            |                             |                    |                 |
| Emergency Management of National Economy                                    | **ICAF                     | 48                          | None               | All             |
| Financial Management (Not yet available)                                    | 10732                      | 10                          | None               | All             |
| Fundamentals of Naval Intelligence  | 10728                      | 24                          | All                | All (R)         |
| General Communications  | 10916-A                    | 14                          | All                | None            |
| Industrial Relations  | 10733                      | 24                          | All                | All             |
| Logistics   | 10902                      | 12                          | All                | All (R)         |
| Logistics I, II, III  | *NWC                       | 48                          | None               | All             |
| Strategy and Tactics, Part I  | *NWC                       | 24                          | None               | All             |
| Strategy and Tactics, Part II   | *NWC                       | 24                          | None               | All             |
| Medical Department Orientation  | 10943-A                    | 6                           | All (R)            | All             |
| Medical Service in Joint Overseas Operations                                | 10769                      | 6                           | All                | All (R)         |
| Manual of the Medical Department, Part I                                    | 10708                      | 24                          | All (R)            | All             |
| Manual of the Medical Department, Part II                                   | 10709                      | 18                          | All (R)            | All             |
| Dental Department Administration  | 10736                      | 24                          | All                | All (R)         |
| <u>TECHNICAL AREA</u>   |                            |                             |                    |                 |
| Naval Electronics, Part I   | 10925                      | 24                          | All                | None            |
| Nucleonics for the Navy   | 10901                      | 24                          | All                | All             |
| Radiological Defense  | 10771                      | 14                          | All                | All             |
| Pharmacy and Materia Medica   | 10999                      | 24                          | All                | All             |
| X-Ray Physics and Technique   | 10702                      | 12                          | All                | All             |
| Control of Communicable Diseases in Man                                     | 10772                      | 18                          | All                | All             |
| Aviation Medicine Practice  | 10912-A                    | 18                          | All                | All             |
| Combat and Field Medicine Practice  | 10706-A                    | 16                          | All                | All             |
| Clinical Laboratory Procedures  | 10994                      | 24                          | All                | All             |
| Radiological Defense and Atomic Medicine                                    | 10701-A                    | 24                          | All                | All             |
| Blood Transfusion, Methods and Procedures                                   | 10998                      | 24                          | All                | All             |
| Physical Medicine in General Practice<br>(Not yet available)                | 10735                      | 21                          | All                | All             |
| Frigid Zone Medical and Dental Practice<br>to be replaced by:               | 10997                      | 12                          | All                | All             |
| Low Temperature Sanitation and Cold<br>Weather Medicine (Not yet available) | 10997-A                    | 9                           | All                | All             |
| Special Clinical Services, Dental   | 10768                      | 24                          | All                | All             |
| Hospital Personnel Administration<br>(Not yet available)                    | 10734                      | 15                          | All (R)            | All             |
| Insect, Pest and Rodent Control   | 10705                      | 18                          | All                | All             |
| Naval Preventive Medicine   | 10703                      | 24                          | All                | All             |
| Hospital Food Service Management<br>(Not yet available)                     | 10767                      | 18                          | All                | All             |

\*NWC. This course administered by the Naval War College. Requests for enrollment should be by official letter addressed to the President, Naval War College, Newport, Rhode Island.

\*\*ICAF. This course administered by the Industrial College of the Armed Forces. Requests for enrollment should be addressed, via official channels, to the Commandant, Industrial College of the Armed Forces, Fort Lesley J. McNair, Washington 25, D. C.

Medical Department Courses. Applications for Medical Department courses should be made on form NavPers 992 (Rev 10/54 or later), with appropriate change in the "To" line, forwarded via official channels to the Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda 14, Maryland. Dental Corps personnel should address Commanding Officer, U. S. Naval Dental School, National Naval Medical Center, Bethesda 14, Maryland.

All other courses. Applications should be submitted on form NavPers 992 (Rev 10/54 or 2/56), forwarded via official channels to the Naval Correspondence Course Center, Naval Supply Depot, Scotia 2, New York.

Promotion point requirements are as follows:

For promotion to Lieutenant Junior Grade - 12 points for each six months service in the grade of Ensign as computed from date of rank.

For promotion to LT, LCDR, or CDR - an average of 24 points for each year in grade up to a maximum of 144.

For promotion to Captain - qualification may be accomplished by earning either an average of 24 points for each year in grade of Commander up to 144 or by completing in grade of Commander one of eight courses of study as follows:

- (a) NWC correspondence courses Strategy and Tactics, Parts I and II or Naval Reserve Officer School courses of the same titles.
- (b) NWC correspondence course Logistics I, II, III.
- (c) NWC correspondence course International Relations.
- (d) NWC correspondence course International Law.
- (e) ICAF correspondence course Emergency Management of National Economy.
- (f) Correspondence courses Foundations of National Power, (NavPers 10770) and Organization for National Security (NavPers 10721) or Naval Reserve Officer School courses entitled International Relations (401) and Organization for National Security (301).

Note: Inactive Reserve Medical Department officers must earn only 12 retirement points in the fiscal year preceding the fiscal year in which they are to be considered for promotion by a selection board. Additional information on the promotion requirements may be found in BuPers Instruction 1416.4B dated 2 October 1957.

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## PREVENTIVE MEDICINE SECTION

### Minimal Pulmonary Tuberculosis in Military Personnel - World War II

The mobilization and maintenance of the Army of the United States in World War II, with initial physical examination of all accepted military personnel and subsequent medical control and hospitalization as necessary, provided an exceptionally valuable opportunity for studying the fate of tuberculous lesions. The medical provisions of the mobilization regulations, permitting acceptance of men with small densely scarred lesions, and the occurrence of active tuberculosis in the military forces as a result of failure of detection on entry or new acquisition of the disease during service, made it possible to study in a known military environment, the progress of tuberculous lesions that became manifest under conditions ranging from sedentary occupations to the extreme physical strains of military combat.

The study here described was set up to take advantage of this unusual opportunity. Its findings are of interest and value at the present time for comparison with currently accumulating data on the course of pulmonary tuberculosis of similar character as affected by methods of treatment (specific chemotherapy) not available at the time of this study.

A research organization was established that would permit observation over a period of years of a group of a thousand men and women with pulmonary tuberculosis in the minimal stage at the time of its first detection, or with reliable records furnishing objective evidence of its presence in that stage at some previous period, e. g., in an Army induction station examination in which the lesion was overlooked. A group of approximately this size was selected and a system of follow-up was set up for a period of three years or more. Because of the nature of the material, the observations were oriented on a military basis. In essence, however, they apply equally well to tuberculosis in a nonmilitary environment.

This study of minimal pulmonary tuberculosis as it occurred in the U. S. Army during World War II was begun in January 1944; the last patient was included in the project in June 1946, preceding the era of chemotherapy for tuberculosis. Observations were continued until September 1949. The primary purpose of this study was to ascertain what happened under war

conditions to military personnel developing minimal pulmonary tuberculosis while in service. It was also hoped to determine the reliability or unreliability of certain criteria for acceptance or rejection of recruits for military service, such as roentgenographic abnormalities and previous history of active tuberculosis.

After excluding the 35 persons who died during the study, the average follow-up period was 52 months for each person. Chest roentgenograms taken on entry into the Army were reviewed for 918 of the 967 military personnel under observation. During the follow-up period, every person in the group was examined three to six times annually for three or more years, and more than 28 films per person were reviewed.

The method of selecting patients for study is believed to have yielded a valid random sample of minimal pulmonary tuberculosis in the Army. For example, the median age of all patients included in this study was 28.2 years, compared with 28.8 years for the patients with minimal disease in the Army as a whole during the same period.

Of 625 persons with active minimal tuberculosis at the time of the first clinical classification by the Army Research Section, the disease improved in one-third and worsened in two-thirds during the period of observation. Of 342 persons with apparently inactive tuberculosis at first study, 78% remained well, 9% had relapses and later improved, while 13% had relapses with subsequent worsening of their disease. The proportion of active cases in which improvement occurred was highest in the group 25 to 34 years of age.

Eighty-two persons developed active pulmonary tuberculosis within twelve months, 31 of them within six months after entry into military service. Despite "acceptable" roentgenograms, of 94 persons with histories of active tuberculosis before duty in World War II, 68 had relapses during service or after discharge. The probability of relapse was greatest in those with histories of pleural effusion, in those with previous extrathoracic tuberculosis, and in those who had less than six months of rest treatment. On the other hand, 30 of the 112 persons with histories of active tuberculosis in the pre-military period remained well while in service and did not experience a relapse subsequently in the period of observation. Unless adequately treated before return to duty, the hazard of relapse during military service after apparent recovery from active tuberculosis is great. The figures involved are admittedly small. These observations were made before chemotherapy became available.

Persons with calcific elements in the parenchymal lesions shown on entry roentgenograms did better in every way than would be expected on the basis of chance alone. In the absence of pre-military skin tests, the implications of this observation are uncertain. In the estimation of activity and potential reactivation, the number, distribution, size, and character of intrathoracic lesions are not as helpful as roentgenographic evidences

of stability or instability of the lesions. The value of a negative tuberculin test has been emphasized. Abnormal physical signs and symptoms were not very helpful in diagnosis. In 391 (63%) of the 625 persons with active tuberculosis at first examination, initial recognition of active pulmonary tuberculosis with no suspicious symptoms was due to routine roentgenograms of the chest.

Among the active cases, the duration of overseas service bore little relation to "breakdown" with active disease or to the subsequent course of disease. Persons engaged in combat fared the worst, while those assigned to light or moderate work outside without combat duty fared the best.

Assignment of "poor risks" to limited duty within continental United States seemed to afford a measure of protection. However, persons with active tuberculosis on limited duty did no better than those on general duty. These findings substantiate the general medical opinion that heavier physical exertion increases the likelihood of "breakdown" with tuberculosis and also increases the likelihood of worsening in active disease.

The type of onset, with or without symptoms, did not bear a significant relationship to the course of disease; one-half of those presenting symptoms proved to have inactive tuberculosis. Persons with persistent rales were more apt to have recurrence of activity than those without rales. Single erythrocyte sedimentation rates did not prove helpful. "Active" cases with sputum persistently negative for tubercle bacilli did better than "active" cases with sputum positive for tubercle bacilli.

Patients with longer periods of hospitalization did much better than those treated for less than six months. Approximately 96% of all observed relapses occurred within the first three years after the end of treatment for the military episode of active disease. Relapses included practically all forms of intra- and extrathoracic tuberculosis.

At the end of the follow-up period in September 1949, of 625 persons with active minimal tuberculosis at first observation, 370 were well, 228 had active disease, 16 were dead of tuberculosis, and 11 had died of other causes. Of 342 with inactive minimal tuberculosis, 262 were well, 72 had active disease, 4 were dead of tuberculosis and 4 had died of other causes. Of the 342 rated inactive at first observation, 75 had had relapses and had active disease.

In brief, of those diagnosed as having active tuberculosis at the time of the first clinical examination by the Army Research Section, 59% were alive and well at the end of the period of observation, compared with 77% of those diagnosed as having apparently inactive disease. (Waring, J. J., Roper, W. H., *Minimal Pulmonary Tuberculosis in Military Personnel: World War II: Am. Rev. Tuberc.*, January 1957; abstracted in *Tuberculosis Abstracts, Nat. Tuberc. A.*, XXX: 9, September 1957.

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Revised General Order No. 20

The attention of all Medical Department personnel is directed to the revision of General Order No. 20 which has been distributed, having been signed by the Secretary of the Navy on 15 July 1957.

Although entitled, "Quarantine Regulations for Vessels and Aircraft of the Armed Forces," it contains information needed by many medical officers ashore if advising persons about quarantine regulations for exit or entry of domestic pets.

Shipment or other means of transport of laboratory specimens of any type into the United States or its territories, commonwealths, and possessions is governed by this General Order. It includes permits which must be attached to the container and a new regulation requiring that for each shipment a copy of the permit along with certain information shall be sent to the Bureau of Medicine and Surgery. These requirements are applicable not only to laboratories and hospitals, but also to individuals traveling under the cognizance of the Armed Forces.

A major change of interest to those moving to and from overseas permits transport of Psittacine birds on Military Sea Transportation Service ships and Military Air Transport aircraft when certain conditions are met. (Communicable Disease Branch, PrevMedDiv, BuMed)

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Know-Obey Program for Traffic Safety

Ignorance and disregard of Signs of Life are big factors in traffic accidents. The Signs of Life are the traffic signs, signals, pavement markings, and other devices that state the law, warn of hazards, and give assistance and protection to all highway users.

The purpose of the Signs of Life program is two-fold: (1) to stimulate prompt recognition of the signs and markings and to encourage complete obedience (preferably voluntary) to them and to the safety rules they represent, and (2) to encourage public support of a program of maintenance, modernization, and standardization.

The Signs of Life are literally lifesavers. They provide drivers and walkers with information they need to chart a safe course through traffic. It would seem to be a foregone conclusion that all travelers would be grateful for this help and would make the best possible use of it. While most people do use the Signs of Life to stay safe in traffic, there are many who tend to ignore them. Even among careful drivers and walkers there is a tendency to become heedless at times and to disregard the warnings of the signs.

That an educational and enforcement program is needed is borne out by traffic accident statistics. In most traffic accidents there is some law

violation. Almost all of the violations involve situations for which signs and devices have been developed to regulate traffic and safeguard motorists. In 1956, 3 out of 10 drivers involved in fatal accidents exceeded speed limits or safe speeds; 1 out of 10 failed to keep to the right of the center line; 1 out of 10 did not have the right-of-way or passed improperly; and 1 out of 20 disregarded "Stop" or warning signs.

One particular type of violation deserves special mention—the disregard of Signs of Life at railroad crossings. Although highway-rail crossing accidents do not account for a high percentage of all traffic accidents, severity is greater than that of other traffic accidents. For this reason, an extra effort must be made to warn the public of the danger.

Deaths in railroad grade crossings accidents in 1956 numbered 1416. Surprisingly, 4 out of 10 grade crossing collisions occur at crossings protected by warning signs, crossing gates, flashing lights, bells, wig-wag signals, or watchmen in addition to the crossbuck and round warning signs. Another significant fact is that in one-third of the collisions, the auto strikes the train, yet the automobile is the more maneuverable vehicle and can stop far more quickly than a train.

The remedy for accidents resulting from disregard of traffic signs, signals, and pavement markings is simple—knowledge of the Signs of Life and obedience to them and stronger enforcement action by police and courts. Getting the public to apply the remedy is not so simple. The following rules spell out the things the individual must do to make the Signs of Life work for him as a motorist and pedestrian.

1. Learn the six basic sign shapes and the message each bears for quick recognition and immediate action.

OCTAGON, red with white lettering, means come to a full stop and be sure the way is clear before proceeding. The older stop signs, yellow with black lettering, have the same meaning.

RECTANGULAR signs, white with black or other color lettering, state the law: parking restrictions, speed limits, turning and passing regulations, et cetera.

TRIANGLE, yellow with black lettering, the newest of the standard signs, requires a driver to yield—that is, slow down or stop—to give right-of-way to cross traffic at intersections.

DIAMOND shaped yellow signs warn of dangerous or unusual conditions ahead, such as curves, side roads, intersections, hills, dips bumps, school zones. Use extra caution until the hazard is passed.

ROUND yellow sign with X and RR means just one thing—a highway-railroad crossing ahead. Be prepared to stop. Obey all protection devices and be sure ALL tracks are clear before crossing.

CROSSBUCK is the traditional symbol at highway-railroad intersections. Alone, or in combination with a bell, flashing lights, gates or other protection, it is there to warn you. Only YOU can insure your safety!

2. Know the meanings of other Signs of Life, such as pavement markings, lights, signals, and special warning and regulatory devices.

3. Obey the Signs of Life under all conditions even if the danger is not apparent. Many crashes occur at what appear to be clear intersections.

4. Be alert so you will be able to adapt your driving to the situations ahead as indicated by the signs you meet.

5. Keep your car in top mechanical condition. You cannot obey traffic signs in a car that will not respond to your demands.

6. Adjust your speed to conditions. Speed limit signs state maximum safe speeds. Drive at a speed that will enable you to stop in the assured clear distance ahead. Be particularly alert at night.

7. Extend every courtesy to other motorists and pedestrians. Yield the right-of-way.

8. Be extra cautious when approaching a grade railroad-highway crossing. Come to a full stop if there is a train in sight. Never drive onto a crossing immediately after a train has passed. Wait just a moment—a train may be coming from another direction.

9. Know all signs, signals, and pavement markings directing pedestrian movement. Obey them at all times. Teach children to know and obey the Signs of Life.

10. At pedestrian crossings, wait for your signal. Be alert, especially for turning cars. Be courteous to other pedestrians and to motorists. Use the crosswalk—a lifeline for safe walking. (Traffic Safety, 51: 42-43, December 1957)

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### Manual of Naval Preventive Medicine - A Progress Report

The binder and Chapters 1, 2, 3, 4, 5, 7, 8, 10, and 11 of the Manual of Naval Preventive Medicine (NavMed P-5010) have been distributed. Drafts of Chapter 6, Water Supply Afloat, and Chapter 12, Preventive Medicine Laboratory Methods, are in preparation for review; Chapter 9, Vector Control, is being printed and should be distributed at an early date.

Environmental sanitation officers and technicians are requested to keep the Bureau of Medicine and Surgery (Code 7221) informed of their current address by use of NavPers 693, "Notice of Change of Address," to insure receipt of subsequent chapters.

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Course in Photofluorographic Interpretation

A 3-months course in photofluorographic interpretation given at the U. S. Naval Medical School, National Naval Medical Center, Bethesda, Md., is available to Medical officers of the Regular Navy and the Naval Reserve. This course serves as a background for further training in internal medicine, diseases of the chest, and radiology.

Interested Medical officers should submit an official request to the Bureau of Medicine and Surgery, Attention Code 7212, for consideration. No service agreement is required. Reserve Medical officers are eligible for this training providing they will have at least one year of obligated service remaining upon completion of their instruction.

\* \* \* \* \*

HAPPY NEW YEAR!

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